

Effects of the Proposed Action on the Listed Species

Implementation of the proposed action would result in the loss of up to 1,643 acres of low-density desert tortoise habitat. Increased human use and development of the desert often result in more human interactions with the desert tortoise and its habitat. Extensive disturbance may result in dispersal of tortoises into surrounding areas which are poor to very poor habitat (Karl 1989). Overall, desert tortoise habitats most susceptible to negative impacts are those at the interfaces between developed lands and open desert. Habitat fragmentation associated with development is a major contributor to population declines throughout the range of the tortoise (Berry and Burge 1984). Even near small settlements (e.g., Mercury) and isolated residences the same factors are present, and the cumulative impacts can spread in a radius of several miles from such areas. For example, domestic dogs can be found digging up and killing desert tortoises several miles from home (Service 1994).

Disturbance of desert tortoise habitat during construction of facilities, excavation of trenches, and creation of drill pads are the most obvious effects to desert tortoise. Desert tortoises may be buried in their burrows as a result of road construction and maintenance, killed or injured by project vehicles, drowned by water discharges into washes, trapped or injured by falling into open holes or trenches, or captured and displaced out of harm's way. Additional harassment may occur from increased levels of human activity, noise, and ground vibrations produced by vehicles and heavy equipment (Bondello 1976; Bondello et al. 1979). Desert tortoises may be captured by workers for use as pets. Ground vibrations can cause desert tortoises to emerge from their burrows; slapping the ground several times within a few feet of a desert tortoise burrow entrance will often cause a desert tortoise to emerge (Medica et al. 1986). The measures proposed by DOE to implement a tortoise education program, conduct preactivity and clearance surveys, impose speed limits, and cease activities that threaten a tortoise until the tortoise moves or is moved out of harm's way should minimize these effects.

Yucca Mountain occurs within a restricted access area which prevents tortoises from being collected or harassed by the public. The release of captive animals which are ill may contribute to the spread of URTD or other diseases in wild populations (Jacobson et al. 1995; Jacobson and Gaskin 1990). Because Yucca Mountain is an isolated and restricted access area, the potential introduction of disease to tortoises in the area through release of captive desert tortoises by the public is unlikely.

A survey of approximately 54 miles of electrical transmission lines in southern Nevada produced the remains of 78 juvenile tortoises which were found beneath 23 towers (McCullough Ecological Systems 1995). Ravens use power transmission towers and other man-made structures for perches to locate small, slow-moving hatchling and juvenile tortoises. Natural

predation in undisturbed, healthy ecosystems is generally not an issue of concern. However, predation rates may be altered when natural habitats are disturbed or modified. Construction of artificial raven perch and nest sites (e.g., power transmission lines) may increase raven predation of desert tortoises. Roads may provide linear open areas that make tortoises more visible to avian predators. Common raven populations in the California deserts have increased ten-fold from 1968 to 1992 in response to expanding human use of the desert (Boarman and Berry 1995). Because ravens make frequent use of food, water, and nest site subsidies provided by humans, their population increases can be tied to this increase in food and water sources, such as landfills and septic ponds (Boarman 1992; Service 1994). Ravens may be attracted to landfills or project sites if trash is accessible by scavengers (Berry 1985; BLM 1990). Considering that ravens were very scarce in this area prior to 1940, it is assumed that the current level of raven predation on juvenile desert tortoises is an unnatural occurrence (BLM 1990).

Beginning in August 1991 and continuing for 32 months, DOE initiated a raven abundance and monitoring program. During the program, project biologists determined that there was no change in the difference between the number of ravens observed between pre- and post-disturbance (Holt and Mueller 1994). No tortoise carcasses were observed under utility poles or raven nest sites. Because ravens occur at Yucca Mountain and potentially may prey on small tortoises, DOE proposes to continue to implement a litter-control program and manage landfills in a manner which minimizes potential attraction of ravens to the Yucca Mountain.

Desert tortoises will continue to be threatened by roads and vehicles on the project site and access roads. Data from permanent study plots in California show that tortoise densities decreased significantly with increasing mileage of linear disturbances (e.g., roads), increasing numbers of human visitors, and increasing percentages of introduced annual plants (Berry 1992). The density of roads, routes, trails, and ways in desert tortoise habitat has a direct effect on mortality rates and losses of tortoises. Access allows people to penetrate into remote, undisturbed parts of the desert, which contributes to tortoise mortality and habitat loss or degradation (Service 1994). During 1991-1996, four (4) tortoises were reported killed on NTS roads. Movement of tortoises out of imminent danger on roads as authorized by previous biological opinions for the project site and NTS should minimize injury and mortality of tortoises.

Implementation of activities as described in the Plan may result in the long-term disturbance of an additional 1,643 acres of desert tortoise habitat beyond prior project activities. The Service believes that no more than fifteen (15) desert tortoises may be incidentally killed or injured during the proposed action, and up to sixty (60) tortoises captured/displaced as a result of the proposed project.

The Service has determined that the level of effect described herein will not reduce appreciably the likelihood of survival and recovery of the Mojave population of the desert tortoise in the wild or diminish the value of critical habitat both for survival and recovery of the desert tortoise because:

- (1) The proposed project area does not occur within any areas recommended for recovery of the desert tortoise or areas designated as critical habitat;
- (2) rehabilitation and revegetation of disturbed sites will minimize many of the long-term effects of the proposed project on the desert tortoise;
- (3) DOE has made a substantial investment of resources to conserve the desert tortoise at Yucca Mountain. With proper management and continued conservation, desert tortoise populations at Yucca Mountain will remain viable; and;
- (4) the project area occurs within the Northeastern RU in Nye County, Nevada. Project activities should not result in a substantial loss of the tortoises within this RU when total desert tortoise population numbers and geographical extent are considered.

Cumulative Effects

Cumulative effects are those effects of future non-Federal (State, local government, or private) activities that are reasonably certain to occur in the project area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

The project area occurs on public land with access restrictions in Nye County. Any future actions on these lands, including Federal transportation rights-of-way and funding in support of the proposed project, will be subject to consultation under section 7 of the Act.

Conclusion

After reviewing the current status of the desert tortoise, the environmental baseline for the project area, the effects of the proposed action and the cumulative effects, it is the Service's biological opinion that construction, operation and monitoring, and closure of a geologic repository at Yucca Mountain is not likely to jeopardize the continued existence of the threatened Mojave

population of the desert tortoise. These actions do not affect any area designated as critical habitat; therefore, no destruction or adverse modification of that habitat is anticipated.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act, as amended, prohibits take (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering (50 CFR § 17.3). "Harass" is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering (50 CFR § 17.3). Incidental take is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant. Under the terms of sections 7(b)(4) and 7(o)(2) of the Act, taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The Service hereby incorporates by reference DOE's six proposed measures from the *Description of the Proposed Action* into this incidental take statement as part of these terms and conditions. The following terms and conditions: (1) Restate measures proposed by DOE, (2) modify the measures proposed by DOE, or (3) specify additional measures considered necessary by the Service. Where these terms and conditions vary from or contradict the measures proposed under the *Description of the Proposed Action*, specifications in these terms and conditions shall apply. The measures described below are nondiscretionary and must be implemented by DOE so that they become binding conditions of any project, contract, grant, or permit issued by DOE, as appropriate, in order for the exemption in section 7(o)(2) to apply.

DOE has a continuing duty to regulate the activity that is covered by this incidental take statement. If DOE fails to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, and/or fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

Amount of Take

Based on the analysis of impacts provided above, measures proposed by DOE, and anticipated project duration, the Service anticipates that the following take could occur as a result of the proposed action:

1. Fifteen (15) desert tortoises may be accidentally injured or killed onsite during project-related activities as a result of the proposed action. An unknown number of desert tortoises may be killed or injured on project-related roads, however the Service anticipates that fewer than five tortoises per year would be killed or injured on these roads.
2. All desert tortoises encountered within the project area or roads associated with the project may be taken by capture and movement out of harm's way; the Service estimates that no more than sixty (60) desert tortoise will be captured and moved during the project.
3. An unknown number of desert tortoises may be taken in the form of indirect mortality through predation by ravens drawn to the project area.
4. An unknown number of desert tortoise eggs and non-emerged hatchlings may be moved or incidentally destroyed as a result of the project activities.
5. An unknown number of desert tortoises may be taken indirectly in the form of harm or harassment through increased noise associated with operation of heavy equipment.

A total of 1,643 acres of desert tortoise habitat may be destroyed as a result of the proposed action, in addition to the 375 acres disturbed under the previous biological opinions (File Nos. 1-5-90-F-6 and 1-5-96-F-307R).

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

Reasonable and Prudent Measures

The Service believes that the following reasonable and prudent measures are necessary and appropriate to minimize take of desert tortoise:

1. Measures shall be taken to minimize take of desert tortoises due to project-related activities and operation of heavy equipment.
2. Measures shall be taken to minimize entrapment of desert tortoises in open trenches.
3. Measures shall be taken to minimize predation on tortoises by ravens drawn to project areas.
4. Measures shall be taken to minimize destruction of desert tortoise habitat, such as soil compaction, erosion, or crushed vegetation, due to project-related activities.
5. Measures shall be taken to ensure compliance with the reasonable and prudent measures, terms and conditions, reporting requirements, and reinitiation requirements contained in this biological opinion.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, DOE must fully comply with the following terms and conditions, which implement the reasonable and prudent measures described above.

1. To implement Reasonable and Prudent Measure Number 1, DOE shall fully implement the following measures:
 - a. Clearance surveys will be conducted by qualified biologists prior to clearing of vegetation at previously undisturbed sites if new disturbances are larger than 5 acres or records indicate tortoises may occur in the area to be disturbed. If the project activity can occur in an adjacent area where no tortoises or sign are present, the proposed activity shall be moved. If no suitable site is totally free of tortoises or tortoise sign, the qualified biologist shall determine which site would cause the least impact to tortoises and their habitat.

In accordance with *Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise* (Service 1992), a qualified desert tortoise biologist shall possess a bachelor's degree in biology, ecology, wildlife biology, herpetology, or closely related fields. The biologist must have demonstrated prior field experience using accepted resource agency techniques to survey for desert tortoises and tortoise sign. In addition, the biologist shall have the ability to recognize and accurately record survey results.

- b. Clearance surveys will be conducted either the day prior to, or the day of, any surface-disturbing activity during the tortoise activity season (February 16 through November 14). Based on the results of the hibernation study conducted at the Yucca Mountain Site Characterization Project (Rautenstrauch et al. 1997), the Service anticipates that most tortoises will be in hibernacula during the inactive season and will remain there during a 7-day period between survey and activity. Therefore, clearance surveys will be conducted within 7 days prior to any surface-disturbing activity during the hibernation period (November 15 through February 15). Qualified desert tortoise biologists will search areas to be cleared using techniques providing 100-percent coverage of all areas to be disturbed, as described in Term and Condition 1.a. above. If tortoises or eggs are found during clearance surveys, they will be moved out of harm's way following Service guidelines (Desert Tortoise Council 1994, revised 1999). All tortoise burrows, and other animal burrows that may be used by tortoises, that are found during clearance surveys will be conspicuously flagged and avoided by at least 30 feet.
- c. If a burrow cannot be avoided, it will be inspected to determine the presence of tortoises or tortoise nests. If unoccupied, the burrow will be collapsed to prevent tortoise entry. All unavoidable burrows containing tortoise eggs or tortoises will be excavated by hand to remove the tortoise and/or eggs. Tortoise eggs and tortoises in harm's way will be removed and relocated by qualified biologists and handled according to desert tortoise handling procedures approved by the Service. (Currently, the approved procedures are in: Desert Tortoise Council 1994, revised 1999).
- d. If removed from a burrow, the tortoise will be placed in the shade of a shrub or in an existing, similar, unoccupied tortoise burrow that is approximately the same size, depth, and orientation as the original burrow. Desert tortoises moved during the tortoise inactive season (i.e., November 15 through February 15), or those considered by the qualified desert tortoise biologist to be in estivation or

brumation, regardless of date, must be placed into an adequate burrow. If suitable, unoccupied burrow (i.e., similar in size, depth, and orientation as the original burrow) is not available, one will be constructed utilizing the protocol for burrow construction in section B.5.f of the Service-approved guidelines (Desert Tortoise Council 1994, revised 1999).

- e. Project activities that may endanger a tortoise will cease if a tortoise is found on a project site. Project activities will resume after the biologist removes the tortoise from danger or after the tortoise has moved to a safe area.
- f. A tortoise biologist or environmental monitor (in place of a desert tortoise biologist) will be onsite during all phases of each construction activity to ensure construction activities are in compliance with this biological opinion and that desert tortoises are not inadvertently harmed.

The environmental monitor may be the project foreman or supervisor who will be responsible for: (1) Enforcing the litter-control program; (2) ensuring that tortoise-proof fences are maintained where applicable; (3) ensuring that desert tortoise habitat disturbance is restricted to authorized areas; (4) ensuring that all equipment and materials are stored within the boundaries of the construction zone or within the boundaries of previously disturbed areas; (5) ensuring that all vehicles associated with construction activities are using existing graded or paved roads or are within the proposed construction zones; (6) ensuring that open trenches or other excavations are inspected in accordance with term and condition 2 of this biological opinion; (7) ensuring that speed limits are observed; and (8) ensuring compliance with the terms and conditions of this biological opinion. An environmental monitor is not authorized to handle tortoises, which will only be done by a qualified desert tortoise biologist.

- g. Vehicles will not be driven off existing roads in non-emergency situations unless authorized by DOE. During the tortoise active season (February 15 through November 15) the proposed vehicle path will be cleared of tortoises immediately prior to off-road travel. During the tortoise inactive season, the proposed vehicle path will be flagged and cleared of tortoises within 7 days prior to off-road travel.
- h. All vehicles will be driven at speeds within the posted speed limits on existing roads, and will not exceed 25 miles per hour on unposted roads.

- I. DOE will continue to present a tortoise education program to all workers and employees working on the project site. This will include information on the life history of the desert tortoise, legal protection for desert tortoises, penalties for violations of Federal and State laws, general tortoise activity patterns, reporting requirements, measures to protect tortoises, and personal measures employees can take to promote the conservation of desert tortoises. The definition of "take" will also be explained. All questions on desert tortoises or actions which may affect tortoise will be answered accurately by the instructor or a qualified tortoise biologist. All DOE and contractor personnel working on the project at Yucca Mountain will complete the DOE tortoise education program.

The education program shall instruct attendees that the definition of "take" includes capture. Therefore, any unauthorized person who picks up a desert tortoise or restricts the animal's ability to move freely, could be found guilty of illegal "take" unless done in accordance with this biological opinion. The same applies for any individual if the authorized level of incidental take has been reached or exceeded. Any action taken to harm, harass, pursue, hunt, shoot, wound, kill, collect, capture, or trap a tortoise, or attempt to conduct any of these activities constitutes take.

Incidental take occurring which is consistent with the *Incidental Take Statement* of this biological opinion would be legal; for example, moving a tortoise out of the path of an approaching vehicle if the tortoise is observed in the road within the project area. However, the tortoise may not be moved if it is not in imminent danger and will leave the road of its own accord. If a tortoise must be moved off a road to avoid imminent injury or mortality, the tortoise must be moved in the same direction of travel. The tortoise shall be picked up gently with two hands, kept level, and carried close to the ground. The tortoise shall be placed in the shade of a shrub approximately 25 feet from the road edge.

- j. Marking or radiotelemetry of desert tortoises is not authorized under this biological opinion. Tortoises shall be purposefully moved only by qualified tortoise biologists, solely for the purpose of moving them out of harm's way, with the exception identified in 1.i. above.
2. To implement Reasonable and Prudent Measure Number 2, DOE shall fully implement the following measures: